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PROBLEMS OF THE TEXAS SWEET POTATO INDUSTRY

Sweet potato production in Texas is becoming a large operation, despite decreases in acreage and number of growers, according to the Texas Agricultural Experiment Station. The State's commercial sweet potato production is concentrated in four areas, consisting of 32 counties. These areas are East Texas, San Antonio, Winter Garden, and Haskell-Munday. East Texas, the largest area, includes 25 counties and produces approximately 80 percent of the State's sweet potato crop.

In the summer of 1960, the Texas experiment station conducted a survey for the purposes of (1) determining the importance of the sweet potato industry to the agricultural economy of the State; (2) identifying the interrelationships of the various production and marketing agencies, such as the grower, shipper, wholesaler, and retailer; and (3) discovering areas where research is needed.

About 14 percent of the growers who took part in the study produced more than 25 acres of sweet potatoes, but the majority of them — 60 percent — grew less than 5 acres. Almost three-fourths of the labor supply was hired, and only 17 percent of the growers reported that sweet potato production is a full-time job.

Leading sweet potato varieties in Texas are Porto Rico, Goldrush, Redgold, and Red Velvet. Porto Rico, the predominant type, is grown by nearly 40 percent of the producers. The outside coloring of the potato which is preferred by growers, shippers, and wholesalers varies; but the majority favor bronze-brown, copper, red, and yellow.

Clean appearance of the potatoes is demanded by the trade. Losses through spoilage at the shipper and wholesaler levels are important because these losses result in increased prices to the consumer. The average loss for shippers was about 9 percent, and that for wholesalers was 4 percent. Careful handling, better control of storage temperatures and humidity, improved varieties, and disease control may help to reduce potato losses.

Uniform grading is an important consideration in acceptance and sale of a product. Field grading is important to the farmer because the majority of the shippers prefer to buy on grade. Uniform sizing of the sweet potatoes is also important in sales acceptance, with medium-sized potatoes preferred by both wholesalers and retailers.

The proper container is important in the packaging of any product. According to the experiment station, the sweet potato industry is not using the most efficient packaging for its product; therefore, this is an area in which considerable research could be done.

Sweet potatoes are in the marketing system throughout the year. Approximately one-fifth of the wholesalers reported handling sweet potatoes the year round — fresh, new-crop potatoes in the summer and early fall and cured and stored potatoes for the winter and spring trade.

More than one-half of the wholesalers indicated that their sweet potato marketing season began in August, September, or October and continued through the following April or May.

The remaining wholesalers reported a shorter marketing season; the shortest periods were November through January and January through March.

Fresh and canned sweet potatoes compete for the consumer's dollar. The two most popular canned sweet potatoes sold in Texas retail stores bore out-of-state labels, indicating that imported canned sweet potatoes account for a considerable share of the Texas market.

Sweet potato growers, shippers, and wholesalers reported that the improvement of sweet potato seedstock and more efficient advertising of sweet potatoes are the most important ways of improving the industry. Better product quality was suggested, although only one-half of the shippers take advantage of the inspection service that already exists.

Improvement or development of better markets for sweet potatoes also was suggested. However, growers were not particularly interested in cooperative marketing; less than 4 percent said that they would belong to such a cooperative association. Forty-five percent of the wholesalers rated better grading as the most effective way to improve the sweet potato industry. Other suggestions include fancier uniform packs, better sizing of the sweet potatoes, more and better labels on the shipper pack, and more efficient handling methods.

Chico — New Processing Tomato



for machine harvesting.

Chico is adapted to the Lower Rio Grande Valley. It has an upright growth habit that permits one or two more cultivations than are possible with most other tomato varieties. In order to obtain the largest yields, the new type should be grown in high-density stands. Field tests have shown Chico to be highly resistant to both Fusarium wilt and gray leaf spot.

Fruits of the new tomato are pear-shaped and similar in size and shape to those produced by the Red Top and Roma varieties. Chico fruits are firm and meaty, with thick walls and two locules filled with red jell. The tough skin prevents cracking almost completely and makes the tomato highly resistant to fruit rots under most weather conditions.

In tests near Weslaco, Texas, Chico has produced approximately twice the yield of Red Top, Roma, and San Marzano tomato varieties. In commercial evaluation trials in cooperation with growers and canners in the Lower Rio Grande Valley, Chico yielded 13 to 15 tons of tomatoes per acre.

Qualified commercial seed growers may obtain Chico seed from the Foundation Seed Department, Texas Agricultural Experiment Station, College Station, Texas. Seed for commercial growers is expected to be available from local seedsmen this fall.

Chemicals Replace Cultivation in Weed Control

The Oklahoma Agricultural Experiment Station reports that chemical weed control is replacing cultivation in the State. During the past few years, the experiment station scientists have made an all-out effort to find herbicides that will reduce cultivation costs and increase crop quality. The following are some of the results of recent experiments in Oklahoma.

Corn — Two pounds of simazin or atrazine per acre, together with one cultivation, were equal to three cultivations and one hoeing for non-irrigated corn production in tests at Paradise, near Coyle. Under irrigated conditions at Stillwater, atrazine and simazin applied at the rate of 2 pounds per acre immediately after the corn was planted controlled annual weeds for the entire season.

Peanuts — Alanap and amiben, applied at the rate of 4 pounds per acre, proved most effective in controlling weeds and grass on peanuts at Perkins. On sandy soils at Stratford, applications at the rate of 8 pounds per acre retarded early growth of young peanut plants. Falone applied at the 8-pound rate reduced peanut stands.

Sorghums — In herbicide tests on irrigated sorghums at Stillwater, atrazine appeared most effective in controlling weeds and grass without injuring the sorghums.

Cotton — Several new experimental herbicides showed promise for use as pre-emergence treatments for weed control in cotton during tests made in 1961. However, none of the new materials was superior to diuron, which has been recommended for use in Oklahoma during the past 6 or 7 years.

Soybeans — Excellent control of weeds and grasses in soybeans was obtained at Perkins with applications of 4 pounds of amiben per acre.

Mungbeans, Cowpeas, and Guar — Pre-emergence tests were conducted at Perkins with alanap, EPTC, amiben, and falone. Applications were made at the rate of 4 and 8 pounds per acre. When amiben was applied at the 4-pound rate, mungbean stands were reduced less than 25 percent. The 8-pound rate of application of both amiben and EPTC reduced stands 50 percent. No injury was observed from other herbicide treatments.

Insect Control for Higher Grass Seed Yield

The insect hazard involved in producing seed from side oats grama grass can be reduced substantially, thereby resulting in an excellent monetary return to the grower, reports the Oklahoma Agricultural Experiment Station. Thrips, which attack and damage the seed-bearing portion of the plant, can be controlled with either dieldrin or dimethoate insecticide.

In a 2-year study conducted by the experiment station, average costs of insecticide treatment amounted to approximately \$10 per acre. Net returns increased more than \$100 an acre as a result of improved yield of undamaged seed.

This finding will greatly improve the economic position of grass seed producers. In addition, the results will make possible the production of high-quality seed so necessary for stand establishment in soil conservation work and in pasture plantings, according to the experiment station.

Kafir-Type Sorghums More Resistant to Borers



Kafir-type grain sorghums are more resistant to European corn borer damage than are milo-type sorghums, reports the United States Department of Agriculture. The expansion of sorghum production into areas that usually have large corn borer populations has created a need for borer-resistant sorghums. In order to meet this need, an extensive field-plot screening program was conducted to locate varieties that can be utilized in breeding sorghums which will withstand the corn borer.

Of more than 30 varieties tested in a 3-year experiment at Ankeny, Iowa, 3 kafir-type sorghums—Pink Kafir, Fremont, and Texas Black-hull Kafir—were among the most resistant to borers. Milo-type sorghums showed the greatest susceptibility to borer damage. Crosses of kafir and milo lines proved intermediate in borer resistance.

The studies show that three-fourths or more of the borer damage occurred in the stems, between the top node and the seed head. Large numbers of larval cavities in sorghum stems cause the heads to bend over or break and fall to the ground. Stem breakage was extensive in most of the milo varieties tested.

Chemicals for Sorghum Midge Control

During the past year, the Texas Agricultural Experiment Station conducted tests to find a practical chemical control for the sorghum midge. Since grain sorghums planted early in the season usually do not become infested with sorghum midge, the plants used in the tests were seeded during the late season.

The studies show that egg laying by the midge occurs most frequently on the third day after the sorghum head emerges. By the end of the fourth day after emergence, approximately 90 percent of the egg laying is complete.

From this information, the experiment station determined that insecticides should be applied to sorghum heads from 1 to 4 days after

the head has emerged. Plants that were treated soon after emergence produced much higher yields than those treated when the heads were in either the partial-bloom or the full-bloom stage. Of the insecticides tested, only Dibrom, endrin, and toxaphene have been approved for use on grain sorghums.

East Texans Should Use More Lime

Farmers in east Texas and on the Gulf Coast Prairie do not use enough lime on their land, according to W. F. Bennett, Soil Chemist with the Texas Agricultural Extension Service. Liming acid soil in these areas is necessary for efficient crop production; yet farmers use only about one-tenth of the amount of lime required. Mr. Bennett says that this situation is difficult to explain, since lime is plentiful, economical, and easy to apply and pays big dividends.

The farmers' low usage of lime may reflect the fact that fertilizing produces quicker results. However, best results are obtained when both lime and fertilizer are applied liberally, since they do not substitute for each other.

Farmers should take soil samples and have them tested in order to determine how much lime is needed. Soil sampling information sheets, containing instructions for taking and sending in samples, are available at local offices of county agricultural agents.

Better Evaporated Milk in Prospect

Evaporated milk that looks and tastes like fresh milk when diluted with water may be nearer reality, says A. M. Meekma, Dairy Specialist with the Texas Agricultural Extension Service. Laboratory studies by the Agricultural Research Service of the United States Department of Agriculture indicate that the addition of a stabilizing compound to evaporated milk which has been processed by using high-temperature, short-time sterilization prevents the milk from gelling in storage and opens the way to improving this product.

Evaporated milk which is sterilized quickly at high temperatures retains fresh-milk flavor and color but tends to gel when stored. Because of this gelling tendency, processors have been unable to use the method, which involves the

application of heat for only 3 to 15 seconds. Current practices of sterilizing evaporated milk are responsible for its characteristic color and cooked flavor, according to Mr. Meekma.

Although preventing the gelling of evaporated milk in storage is an important advance, it does not mean that a completely stable, high-quality product has been achieved, according to the dairy specialist. It does mean, however, that scientists can take advantage of the high-temperature, short-time sterilization process in developing improved evaporated milk.



Recent Research Results

★ The Texas Agricultural Experiment Station reports that there was no significant difference in the performance of groups of 2-year-old calving heifers when they were fed supplemental cottonseed cake daily, twice each week, or three times weekly. Moreover, differences in gain were not significant for weaned heifer calves fed at these intervals.

★ Tests conducted by the Texas Agricultural Experiment Station during 1959-60 show that moldboard plowing in the fall, followed by lister bedding in the spring, reduces pink bollworm moth emergence by 96.8 percent as compared with an unplowed check plot. Burying shredded pink bollworm-infested cotton residue at a depth of 2 inches decreased moth emergence by 81.1 percent. Using a flail-type rotary shredder and burying the residue was considerably more effective in lowering pink bollworm moth emergence than burying residue from a conventional shredder using a horizontal blade.

★ Nitrogen fertilizer substantially increased the yield of common Bermuda grass in a 5-year test on Houston Black clay soils at Temple, Texas. Yields appeared to respond slightly to phosphorus, but there was no yield response to potassium or lignaceous shale applied to the soil. According to the Texas Agricultural Experiment Station, economical responses from the use of up to 120 pounds of nitrogen per acre were obtained in every year of the study except in 1956, which was an extremely dry year.